36. (Added) The polymer of claim 35, wherein Y comprises an adamantane or a diamantane.

37. (Added) The polymer of claim 35, wherein the aryl comprises a tolanyl, a phenylethynylphenylethynylphenyl, and a p-tolanylphenyl.

38. (Added) The polymer of claim 35, wherein the branched aryl comprises a 1,2-bis(phenyl-ethynyl)phenyl.

39. (Added) The polymer of claim 35, wherein the arylene ether comprises a p-tolanylphenyl ether.

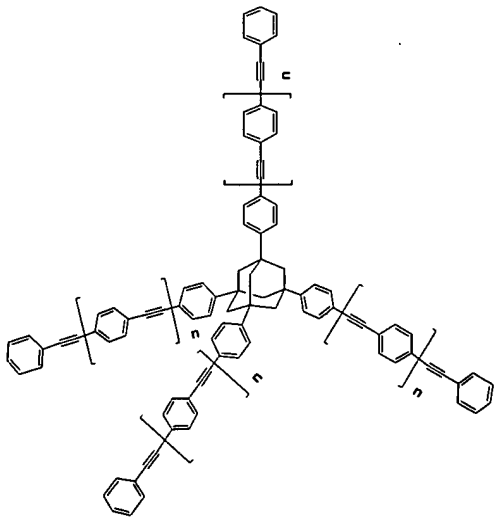
40. (Added) The polymer of claim 35, wherein at least three of the aryl, the branched aryl, and the arylene ether have a reactive triple bond.

41. (Added) The polymer of claim 35, wherein all of the aryl, the branched aryl, and the arylene ether have a reactive triple bond.

42. (Added) The polymer of claim 35, wherein R_1, R_2, R_3 and R_4 have a total length L, and the low dielectric constant polymer has a dielectric constant K, and wherein K decreases when L increases.

43. (Added) The polymer of claim 35, wherein the polymer comprises a poly(arylene ether).

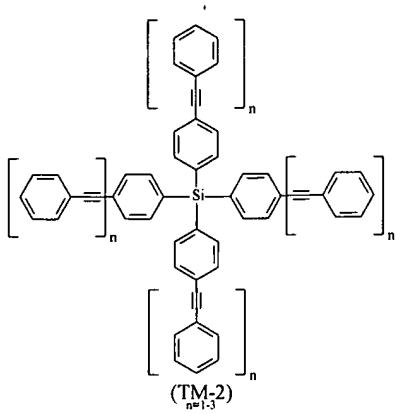
44. (Added) The polymer of claim 35, wherein the at least one thermosetting monomer has a structure according to formula TM-1:



(TM-1)

wherein n=1-3.

45. (Added) The polymer of claim 35, wherein the at least one thermosetting monomer has a structure according to formula TM-2:



(TM-2)
n=1-3

wherein n=1-3.

46. (Added) The polymer of claim 35, wherein the at least one thermosetting monomer is located in one of the backbone of the polymer, a side chain on the backbone of the polymer, or the terminus of the polymer.

47. (Added) The polymer of claim 46, wherein the at least one thermosetting monomer is located in the backbone of the polymer.

48. (Added) The polymer of claim 46, wherein the at least one thermosetting monomer is located in a side chain on the backbone of the polymer.

49. (Added) The polymer of claim 46, wherein the at least one thermosetting monomer is located at the terminus of the polymer.